

**CLAIMS**

1           1. A data recording and reproducing apparatus  
2           comprising:

3            a random-accessible recording device for storing  
4           data;

5            an input path for transferring input data to said  
6           recording device;

7            an input buffer disposed on said input path for  
8           temporarily storing said input data;

9            an output path for transferring output data stored  
10          in said recording device, said output path being separate  
11          from said input path;

12          an output buffer for temporarily storing the output  
13          data transferred through said output path; and

14          a controller for simultaneously storing said input  
15          data into said input buffer and transferring said output  
16          data from said output buffer, in parallel with writing  
17          from said input buffer to said recording device or  
18          reading from said recording device to said output buffer.

1           2. The data recording and reproducing apparatus  
2           according to claim 1, wherein said controller is  
3           positioned between said input and output buffers and said  
4           recording device and performing said storing, said  
5           transferring, said writing, and said reading, in response  
6           to commands from the outside.

1           3. The data recording and reproducing apparatus  
2           according to claim 2, wherein a path used for command  
3           input and status output is connected to said controller,  
4           separately from said input path and said output path.

4. The data recording and reproducing apparatus according to any one of claims 1, 2 and 3, wherein each of said input buffer and said output buffer has a first memory area and a second memory area, and  $t_1 + t_2 > T_1$  and  $t_1 + t_2 > T_2$  are satisfied where  $t_1$  is a time required for writing data into said recording device the amount of which is sufficient to fill the first or second memory area of said input buffer,  $T_1$  is a time required for filling the first or second memory area of said input buffer with data,  $t_2$  is a time required for reading out data from said recording device the amount of which is sufficient to fill the first or second memory area of said output buffer, and  $T_2$  is a time required for completely outputting the data filled in the first or second memory area of said output buffer.

1           5. A method for recording and reproducing video data  
2        in which the video data is recorded in a  
3        random-accessible recording device having separate input  
4        and output buffers and the video data recorded in said  
5        recording device is reproduced, said method comprising  
6        the steps of:

7            storing the video data from the outside into said  
8        input buffer;

9            writing the video data stored in said input buffer  
10      to said recording device;

11        reading out the video data recorded in said  
12      recording device to said output buffer; and

13        transferring the video data read out to said output  
14      buffer to the outside simultaneously with said storing  
15      step.

16        6. The method according to claim 5, wherein each of  
17      said input buffer and said output buffer has a first  
18      memory area and a second memory area, and  $t_1 + t_2 > T_1$  and  
19       $t_1 + t_2 > T_2$  are satisfied where  $t_1$  is a time required for  
20      writing data into said recording device the amount of  
21      which is sufficient to fill the first or second memory  
22      area of said input buffer,  $T_1$  is a time required for  
23      filling the first or second memory area of said input  
24      buffer with data,  $t_2$  is a time required for reading out  
25      data from said recording device the amount of which is  
26      sufficient to fill the first or second memory area of  
27      said output buffer, and  $T_2$  is a time required for  
28      completely outputting the data filled in the first or  
29      second memory area of said output buffer.

1           7. A disk drive unit comprising:  
2            a hard disk for storing data;  
3            an input path for transferring input data to said  
4            hard disk;  
5            an output path for outputting data stored in said  
6            hard disk, said output path being separate from said  
7            input path; and  
8            a file system disposed between said input and output  
9            paths and said hard disk for managing data stored in said  
10           hard disk.

1           8. The disk drive unit according to claim 7, wherein  
2            an input buffer is disposed on said input path, an output  
3            buffer is disposed on said output path, and a controller  
4            for controlling said input buffer and said output buffer  
5            is provided between said input and output buffers and  
6            said hard disk.

1           9. The disk drive unit according to claim 8, wherein  
2            said file system is built in said controller.

1           10. The disk drive unit according to claim 9,  
2           wherein said controller stores data into said input  
3           buffer and transfers data from said output buffer  
4           simultaneously, in parallel with writing from said input  
5           buffer to said hard disk or reading from said hard disk  
6           to said output buffer.

1           11. The disk drive unit according to claim 10,  
2           wherein each of said input buffer and said output buffer  
3           has a first memory area and a second memory area, and  $t_1$   
4           +  $t_2$  >  $T_1$  and  $t_1 + t_2 > T_2$  are satisfied where  $t_1$  is a time

5 required for writing data into said hard disk the amount  
6 of which is sufficient to fill the first or second memory  
7 area of said input buffer,  $T_1$  is a time required for  
8 filling the first or second memory area of said input  
9 buffer with data,  $t_2$  is a time required for reading out  
10 data from said hard disk the amount of which is  
11 sufficient to fill the first or second memory area of  
12 said output buffer, and  $T_2$  is a time required for  
13 completely outputting the data filled in the first or  
14 second memory area of said output buffer.

1           12. A control unit for a data recording and  
2           reproducing apparatus comprising:

3           an input buffer for temporarily storing data to be  
4           stored in a random-accessible recording device;

5           an output buffer for temporarily storing data from  
6           said recording device to transfer the data; and

7           a controller for controlling data storage and output  
8           for said input buffer and said output buffer and having a  
9           file system for managing data stored in said recording  
10          device.

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